Honors Chemistry - Expectations

Introduction:

Honors Chemistry provides a basic knowledge of matter, its changes and how these relate to everyday life. The student must be willing to put forth effort in order to develop the ability to think and reason scientifically and critically. Emphasis is placed on atomic theory, bonding theory, stoichiometry, acid-base systems, oxidation/reduction, and states of matter in energy changes. A laboratory program is included to reinforce the development of concepts and acquaint the student with scientific investigation.

The course is designed for the college bound student who likes the challenge of a faster pace and more in depth course of study. This student may or may not wish to pursue a career in the sciences. It provides the student with skills useful in all areas. Understanding the make up of the materials in our world will benefit the student for ever. Learning to think logically and problem solve are skills vital for the college bound student.

The Honors Chemistry class does a number of other things for the student. It opens the door to our higher level classes. Taking the science and math AP classes following Honors Chemistry is a wonderful way to show the colleges that the student is well prepared, and is already able to handle the college level material. Success in this course will give the student confidence and a sense of accomplishment.

Student Responsibilities:

The student will need the following items for the class:

1. A note book to keep notes and practice problems.
2. A scientific calculator (not necessarily a graphing calculator).
3. A lab book as described in class (will be used for future science classes as well).

Each student will be asked to complete homework assignments, projects, labs, quizzes and tests. These items will be graded and used to calculate the student grade. The percentages each item will contribute to the grade will vary from marking period to marking period depending on the time spent on each. The test average will, however, always be at least 50% of the grade. This will help the student prepare for college, where the majority of the grade is determined by exam.

From the Teachers:

Chemistry is sometimes challenging, but well worth it. We hope that we can convey to you the love and respect we have for the subject. We know it will be a great semester for all of us.

Honors Chemistry - Information Sheet

Dear Parent,

Below you will find some information that may be useful to you. We are very glad that your student has made the decision to take this high level course. We hope the experience is a good one for all parties involved. Would you please read the expectation sheet and the information below, sign your name on the line below, tear along the line and have your son/daughter return it to us.

How to contact us:

The best way to contact us is using e-mail. It goes directly to our desk and we check it many times a day. You will find the e-mail address below. You may also call directly to my science voice mail on the extension listed below. However, we may be in class at that point and not able to speak to you.

How we can contact you:

If you feel comfortable with placing your e-mail address below, we can contact you through that process. We, of course, will keep it confidential. It would also be useful if you could give us a phone number where we can contact you during the day so that we do not bother you at night.

E-mail address vreti@bensalemsd.org

Science Phone Number 215 – 750 – 2800 Ext. 3597

Tear or Cut Here

Students Name_____ Period _____

E-mail address _____ (optional)

Phone Number _____ (optional)

Parent Signature _____

Thank you for your time.
Valerie Reti

Flinn Scientific's Student Safety Contract

PURPOSE

Science is a hands-on laboratory class. You will be doing many laboratory activities which require the use of hazardous chemicals. Safety in the science classroom is the #1 priority for students, teachers, and parents. To ensure a safe science classroom, a list of rules has been developed and provided to you in this student safety contract. These rules must be followed at all times. Two copies of the contract are provided. One copy must be signed by both you and a parent or guardian before you can participate in the laboratory. The second copy is to be kept in your science notebook as a constant reminder of the safety rules.

GENERAL RULES

1. Conduct yourself in a responsible manner at all times in the laboratory.
2. Follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ask the instructor before proceeding.
3. Never work alone. No student may work in the laboratory without an instructor present.
4. When first entering a science room, do not touch any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.
5. Do not eat food, drink beverages, or chew gum in the laboratory. Do not use laboratory glassware as containers for food or beverages.
6. Perform only those experiments authorized by the instructor. Never do anything in the laboratory that is not called for in the laboratory procedures or by your instructor. Carefully follow all instructions, both written and oral. Unauthorized experiments are prohibited.
7. Be prepared for your work in the laboratory. Read all procedures thoroughly before entering the laboratory.
8. Never fool around in the laboratory. Horseplay, practical jokes, and pranks are dangerous and prohibited.
9. Observe good housekeeping practices. Work areas should be kept clean and tidy at all times. Bring only your laboratory instructions, worksheets, and/or reports to the work area. Other materials (books, purses, backpacks, etc.) should be stored in the classroom area.
10. Keep aisles clear. Push your chair under the desk when not in use.
11. Know the locations and operating procedures of all safety equipment including the first aid kit, eyewash station, safety shower, fire extinguisher, and fire blanket. Know where the fire alarm and the exits are located.
12. Always work in a well-ventilated area. Use the fume hood when working with volatile substances or poisonous vapors. Never place your head into the fume hood.
13. Be alert and proceed with caution at all times in the laboratory. Notify the instructor immediately of any unsafe conditions you observe.
14. Dispose of all chemical waste properly. Never mix chemicals in sink drains. Sinks are to be used only for water and those solutions designated by the instructor. Solid chemicals, metals, matches, filter paper, and all other insoluble materials are to be disposed of in the proper waste containers, not in the sink. Check the label of all waste containers twice before adding your chemical waste to the container.
15. Labels and equipment instructions must be read carefully before use. Set up and use the prescribed apparatus as directed in the laboratory instructions or by your instructor.
16. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments. Clean all work surfaces and apparatus at the end of the experiment. Return all equipment clean and in working order to the proper storage area.
17. Experiments must be personally monitored at all times. You will be assigned a laboratory station at which to work. Do not wander around the room, distract other students, or interfere with the laboratory experiments of others.
18. Students are never permitted in the science storage rooms or preparation areas unless given specific permission by their instructor.
19. Know what to do if there is a fire drill during a laboratory period; containers must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.
20. Handle all living organisms used in a laboratory activity in a humane manner. Preserved biological materials are to be treated with respect and disposed of properly.
21. When using knives and other sharp instruments, always carry with tips and points pointing down and away. Always cut away from your body. Never try to catch falling sharp instruments. Grasp sharp instruments only by the handles.
22. If you have a medical condition (e.g., allergies, pregnancy, etc.), check with your physician prior to working in lab.

CLOTHING

23. Any time chemicals, heat, or glassware are used, students will wear laboratory goggles. There will be no exceptions to this rule!
24. Contact lenses should not be worn in the laboratory unless you have permission from your instructor.
25. Dress properly during a laboratory activity. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory. Long hair must be tied back and dangling jewelry and loose or baggy clothing must be secured. Shoes must completely cover the foot. No sandals allowed.
26. Lab aprons have been provided for your use and should be worn during laboratory activities.

ACCIDENTS AND INJURIES

27. Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to the instructor immediately, no matter how trivial it may appear.
28. If you or your lab partner are hurt, immediately yell out "Code one, Code one" to get the instructor's attention.
29. If a chemical splashes in your eye(s) or on your skin, immediately flush with running water from the eyewash station or safety shower for at least 20 minutes. Notify the instructor immediately.
30. When mercury thermometers are broken, mercury must not be touched. Notify the instructor immediately.

HANDLING CHEMICALS

31. All chemicals in the laboratory are to be considered dangerous. Do not touch, taste, or smell any chemicals unless specifically instructed to do so. The proper technique for smelling chemical fumes will be demonstrated to you.
32. Check the label on chemical bottles twice before removing any of the contents. Take only as much chemical as you need.
33. Never return unused chemicals to their original containers.

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Flinn Scientific's Student Safety Contract

34. Never use mouth suction to fill a pipet. Use a rubber bulb or pipet pump.
35. When transferring reagents from one container to another, hold the containers away from your body.
36. Acids must be handled with extreme care. You will be shown the proper method for diluting strong acids. Always add acid to water, swirl or stir the solution and be careful of the heat produced, particularly with sulfuric acid.
37. Handle flammable hazardous liquids over a pan to contain spills. Never dispense flammable liquids anywhere near an open flame or source of heat.
38. Never remove chemicals or other materials from the laboratory area.
39. Take great care when transporting acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.

HANDLING GLASSWARE AND EQUIPMENT

40. Carry glass tubing, especially long pieces, in a vertical position to minimize the likelihood of breakage and injury.
41. Never handle broken glass with your bare hands. Use a brush and dustpan to clean up broken glass. Place broken or waste glassware in the designated glass disposal container.
42. Inserting and removing glass tubing from rubber stoppers can be dangerous. Always lubricate glassware (tubing, thistle tubes, thermometers, etc.) before attempting to insert it in a stopper. Always protect your hands with towels or cotton gloves when inserting glass tubing into, or removing it from, a rubber stopper. If a piece of glassware becomes "frozen" in a stopper, take it to your instructor for removal.
43. Fill wash bottles only with distilled water and use only as intended, e.g., rinsing glassware and equipment, or adding water to a container.
44. When removing an electrical plug from its socket, grasp the plug, not the electrical cord. Hands must be completely dry before touching an electrical switch, plug, or outlet.
45. Examine glassware before each use. Never use chipped or cracked glassware. Never use dirty glassware.
46. Report damaged electrical equipment immediately. Look for things such as frayed cords, exposed wires, and loose connections. Do not use damaged electrical equipment.
47. If you do not understand how to use a piece of equipment, ask the instructor for help.
48. Do not immerse hot glassware in cold water; it may shatter.

HEATING SUBSTANCES

49. Exercise extreme caution when using a gas burner. Take care that hair, clothing and hands are a safe distance from the flame at all times. Do not put any substance into the flame unless specifically instructed to do so. Never reach over an exposed flame. Light gas (or alcohol) burners only as instructed by the teacher.
50. Never leave a lit burner unattended. Never leave anything that is being heated or is visibly reacting unattended. Always turn the burner or hot plate off when not in use.
51. You will be instructed in the proper method of heating and boiling liquids in test tubes. Do not point the open end of a test tube being heated at yourself or anyone else.
52. Heated metals and glass remain very hot for a long time. They should be set aside to cool and picked up with caution. Use tongs or heat-protective gloves if necessary.
53. Never look into a container that is being heated.
54. Do not place hot apparatus directly on the laboratory desk. Always use an insulating pad. Allow plenty of time for hot apparatus to cool before touching it.
55. When bending glass, allow time for the glass to cool before further handling. Hot and cold glass have the same visual appearance. Determine if an object is hot by bringing the back of your hand close to it prior to grasping it.

QUESTIONS

56. Do you wear contact lenses?
    ☐ YES ☐ NO
57. Are you color blind?
    ☐ YES ☐ NO
58. Do you have allergies?
    ☐ YES ☐ NO

    If so, list specific allergies _____

_____

_____

AGREEMENT

I, _____,
(student's name) have read and agree to follow all of the safety rules set forth in this contract. I realize that I must obey these rules to ensure my own safety, and that of my fellow students and instructors. I will cooperate to the fullest extent with my instructor and fellow students to maintain a safe lab environment. I will also closely follow the oral and written instructions provided by the instructor. I am aware that any violation of this safety contract that results in unsafe conduct in the laboratory or misbehavior on my part, may result in being removed from the laboratory, detention, receiving a failing grade, and/or dismissal from the course.

_____
Student Signature

_____
Date

Dear Parent or Guardian:

We feel that you should be informed regarding the school's effort to create and maintain a safe science classroom/laboratory environment.

With the cooperation of the instructors, parents, and students, a safety instruction program can eliminate, prevent, and correct possible hazards.

You should be aware of the safety instructions your son/daughter will receive before engaging in any laboratory work. Please read the list of safety rules above. No student will be permitted to perform laboratory activities unless this contract is signed by both the student and parent/guardian and is on file with the teacher.

Your signature on this contract indicates that you have read this Student Safety Contract, are aware of the measures taken to ensure the safety of your son/daughter in the science laboratory, and will instruct your son/daughter to uphold his/her agreement to follow these rules and procedures in the laboratory.

_____
Parent/Guardian Signature

_____
Date

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Student Guidelines for Using Laptops in the Classroom

Using the laptop computers at BHS is a privilege. Here are some rules that you must follow if you are to keep that privilege.

1. Treat the laptop with respect. It is a delicate piece of equipment

2. Keep the laptop "thumb-closed" while the teacher is talking or the laptop is not in use

3. Keep your fingers off the monitor/screen

4. ABSOLUTELY NO food or drink around the laptops

5. The laptop is for educational purposes only. It is not for surfing the web, downloading itunes, etc. You may only visit the websites that pertain to the research you are doing for this class.

6. Shut the laptop down completely before you put it away. Do not close the lid until the screen has gone black.

7. Be sure to follow your teacher's instructions for putting the laptops away.

The laptop computers at BHS are networked. They will only work inside BHS. That means that you will not be able to log on or do anything to these computers outside our network.

STYLE by Professor Anthony Gregorc

Extending Jung's research, Gregorc believes people think either abstractly or concretely, and organize thoughts either sequentially or randomly.

Thinking or Mind "Styles" are in four patterns:

a. Abstract Random
b. Concrete Random
c. Abstract Sequential
d. Concrete Sequential

Everyone has some characteristics of all four, but we basically operate in one mind style

(To double check your Mind Style, order the Gregorc book listed in the Bibliography which includes the TRANSACTION ABILITY Inventory. This is a quick assessment with no right or wrong answers.)

Take a look at the following descriptions of the four types of Mind Styles, adapted from Gregorc's work. Which one sounds most like you? You're probably right!

Which appears closest to how you perceive yourself?

1. Is a comfortable environment important to you?
2. Are relationships most important in your life?
3. Would you describe yourself as "colorful"?
4. Are you "flexible"? Do you dislike schedules?
5. Do you generally avoid competitive settings?
6. Do you find detail and directions difficult?
7. Do you see the "whole" picture easier than the "parts"?
8. Do you consider yourself "reflective"?
9. Do you consider yourself a good judge of character?
10. Do you participate in or enjoy the arts?
11. Are group discussions appealing to you?
12. Are you intuitive? Do you sense "vibrations" around you?

If YES, you are probably ABSTRACT RANDOM.

==========

1. Would you consider yourself experimental?
2. Do you like surrounding yourself in a rich environment?
3. Do you make "intuitive leaps" in thinking?
4. Do you consider yourself a "trail blazer"?
5. Do you need to envision what has not been done before, then make it happen?
6. Do others sometimes find your point of view "different"?
7. Is "changing" appealing?
8. Would you consider yourself to be a risk-taker?
9. Are you colorful and creative, yet practical in the plan?

10. Are you a good problem solver?
11. Do you see the "big picture"?
12. Do you thrive on diversity, drama and complex problems which require creating?

If YES, you are probably CONCRETE RANDOM.

==========

1. Do you like "hands-on" experiences?
2. Do you prefer step-by-step directions?
3. Is a linear approach best for you?
4. Do you naturally order and organize things?
5. Do you prefer to work without distractions?
6. Is time and efficiency of primary importance to you?
7. Are you task and goal oriented?
8. Are you recognized for efficiency, exactness and accuracy?
9. Do you relax by organizing, puttering and fixing things?
10. Would you consider yourself practical and "level-headed"?
11. Do you organize in a conventionally recognized way?
12. Do you consider yourself analytic?

If YES, you are probably CONCRETE SEQUENTIAL.

==========

1. Are you rational?
2. Are you sequential?
3. Do you have low tolerance for distractions?
4. Do you love to debate and discuss?
5. Do you read the best sellers and every book you can?
6. Are you constantly buying or borrowing books?
7. Do you enjoy researching?
8. Do you watch news shows and documentaries routinely?
9. Do you consider yourself a "thinker"?
10. Do others see you as intellectual?
11. Do you love the world of ideas?
12. Would you rather research than invent?

IF YES, you are probably ABSTRACT SEQUENTIAL.

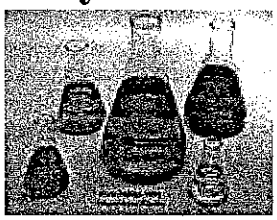
50

Lab Drawer Inventory Room 234

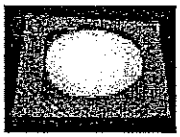
The following items should be in your drawer at check-in and check-out. You are responsible for all equipment. Any item you break during the year must be paid for by cash or IOU. (Any unpaid IOU is entered as an obligation at the end of the year)

↓Items in your Drawer↓

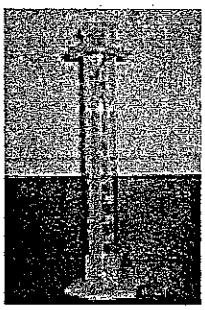
Beakers: Two 150 ml
Two 250 ml
One 400 ml
One 600 ml



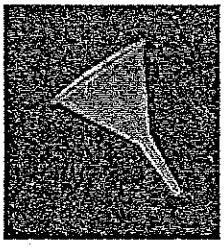
Erlenmeyer Flask:
One 125 ml
One 250 ml



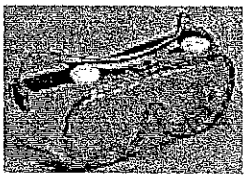
Wire Pad



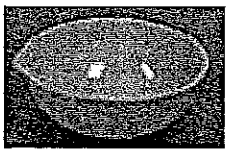
Graduated Cylinder: One 10 ml
One 25 ml



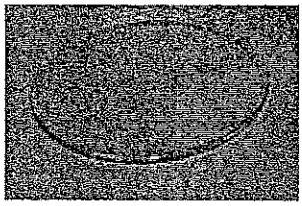
Pyrex Funnel:
One Long or Short



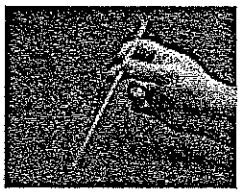
Two Goggles



Evaporating Dish



Watch Glass

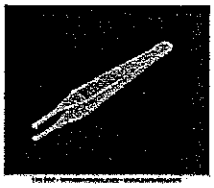


Stirring Rod

Eye Dropper

Test Tube Clamp

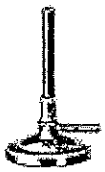
Buret Clamp



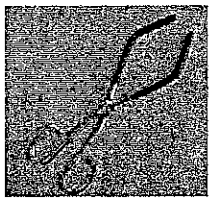
Forcepts

Scoopula

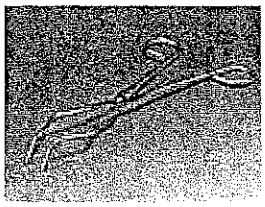
Items in the common area:



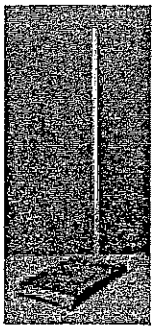
Bunsen Burner And Hose



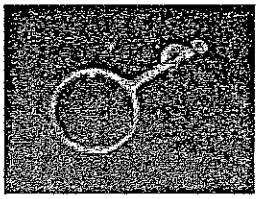
Beaker Tongs



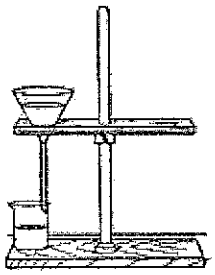
Crucible Tongs



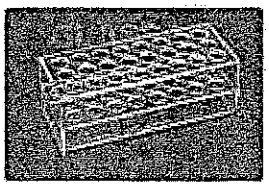
Ring Stand



Iron Ring

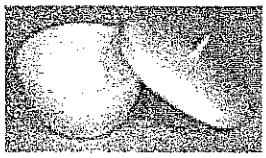


Funnel Rack



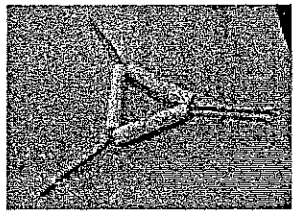
Test Tube Rack

Other Items You May Encounter:

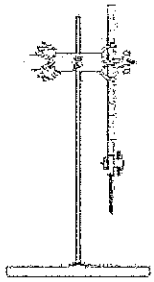


Crucible

Spot Plate

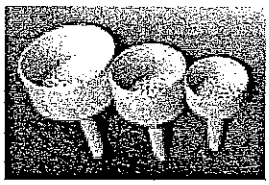


Pipe Stem Triangle

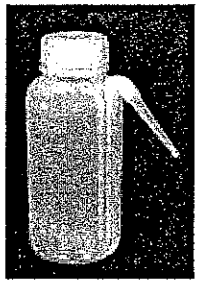


Buret and Stand

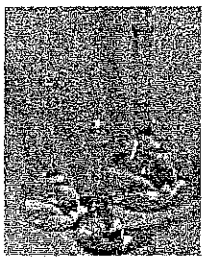
Morter + Pestel



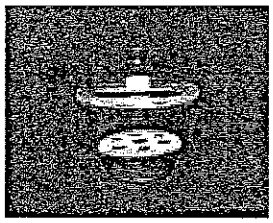
Buchner Funnel



Wash Bottle Distilled Water



Volumetric Flask



Desiccator

STUDENT LABORATORY STORAGE

STUDENT DRAWER

BEAKERS

150 ml (2)
250 ml (2)
400 ml (1)
600 ml (1)

ERHLENMEYER FLASKS

125 ml (1)
250 ml (1)

GRADUATED CYLINDERS

10 ml PYREX
25 ml PYREX

PYREX FUNNEL

PYREX TEST TUBES (5)

WATCH GLASS

EVAPORATING DISH

STIRRING ROD

TEST TUBE CLAMP

BURETTE CLAMP

FORCEPS

SCOOPULA

ASBESTOS GAUZE PAD (wire gauze)

TRANSFER PIPETTE (dropper pipet)

[redacted]

COMMON STORAGE

1. APRONS (2)
2. BURNER WITH HOSE
3. TONGS, BEAKER
4. TONGS, CRUCIBLE
5. TEST TUBE RACK
6. FUNNEL RACK (optional)
7. [redacted]
8. RING STAND
9. IRON RING
10. [redacted]

NOTE TO THE STUDENT:

The materials on this sheet are not to be mix-treated in any way. You are responsible for them.

Spot checks will be taken and areas not in good condition will be reason for the students laboratory grade to be reduced.

DAMAGE MUST BE REPORTED IMMEDIATELY!!

DRAWER NUMBER_____ KEY NUMBER_____

Common STORAGE NUMBER_____ KEY NUMBER_____

_____ _____

(NAME) (NAME)

PRE CHEMISTRY QUIZ

NAME*

1. What is the formula for water?

2. What is the formula for salt?

3. List 3 particles of an atom.

   A. B. C.

4. What is the gaseous state of water called?

5. What does a liter measure?

6. On the Celsius scale, what is the freezing point of water?

7. List the symbols for the following elements:

   A. Oxygen_____ C. Hydrogen_____ E. Nitrogen_____ G. Carbon_____

   B. Zinc_____ D. Copper _____ F. Gold _____ H. Sulfur_____

8. How many significant figures are in 7.38?

9. What would be the scientific notation for 1600?

10. How many seconds are in 365 days?

11. Solve for x.

$$\frac{(760)(25)}{(275)} = \frac{(745)(x)}{(300)}$$

12. Solve for x.

$$650 = \frac{20}{x}$$

Periodic Table of the Elements

Department of Chemistry
Lebanon Valley College
Annville, Pennsylvania 17003

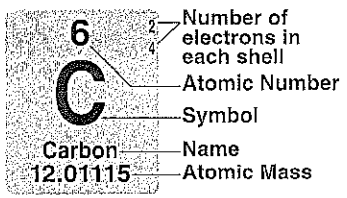
1 H 1.0079																	2 He 4.0026
3 Li 6.941	4 Be 9.0122											5 B 10.811	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.180
11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.086	15 P 30.974	16 S 32.066	17 Cl 35.453	18 Ar 39.948
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.88	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.847	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.39	31 Ga 69.723	32 Ge 72.61	33 As 74.922	34 Se 78.96	35 Br 79.904	36 Kr 83.80
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57 La 138.91	72 Hf 178.49	73 Ta 180.95	74 W 183.85	75 Re 186.21	76 Os 190.2	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (210)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Ha (262)	106 Sg (266)	107 Ns (261)	108 Hs (265)	109 Mt (266)									

58 Ce 140.12	59 Pr 140.91	60 Nd 144.24	61 Pm (147)	62 Sm 150.36	63 Eu 151.96	64 Gd 157.25	65 Tb 158.93	66 Dy 162.50	67 Ho 164.93	68 Er 167.26	69 Tm 168.93	70 Yb 173.04	71 Lu 174.97
90 Th 232.04	91 Pa 231.04	92 U 238.03	93 Np (237)	94 Pu (239)	95 Am (241)	96 Cm (244)	97 Bk (249)	98 Cf (252)	99 Es (252)	100 Fm (257)	101 Md (258)	102 No (259)	103 Lr (262)

IUPAC Standard Atomic Weights Abridged to Five Significant Figures
Pure and Applied Chemistry 1991, *63(7)*, 987-988
See *Chem. Eng. News* May 2, 1994, p. 26 for details of elements 104-109.

revised 5/6/94

Periodic Table of the Elements



Metals | Transition Elements | Inner Transition Elements

Nonmetals | Noble Gases | Synthetic

Radioactive

1 New designation
1A Original designation

( ) Indicates atomic weight of most stable isotope

1 1A	2 2A	3 3B	4 4B	5 5B	6 6B	7 7B	8	9 8B	10	11 1B	12 2B	13 3A	14 4A	15 5A	16 6A	17 7A	18 8A
1 **H** Hydrogen 1.00797																	2 **He** Helium 4.0026
3 **Li** Lithium 6.941	4 **Be** Beryllium 9.0122											5 **B** Boron 10.811	6 **C** Carbon 12.01115	7 **N** Nitrogen 14.0067	8 **O** Oxygen 15.9994	9 **F** Fluorine 18.9984	10 **Ne** Neon 20.179
11 **Na** Sodium 22.9898	12 **Mg** Magnesium 24.305											13 **Al** Aluminum 26.9815	14 **Si** Silicon 28.086	15 **P** Phosphorus 30.9738	16 **S** Sulfur 32.064	17 **Cl** Chlorine 35.453	18 **Ar** Argon 39.948
19 **K** Potassium 39.0983	20 **Ca** Calcium 40.08	21 **Sc** Scandium 44.956	22 **Ti** Titanium 47.88	23 **V** Vanadium 50.9412	24 **Cr** Chromium 51.996	25 **Mn** Manganese 54.9380	26 **Fe** Iron 55.847	27 **Co** Cobalt 58.9332	28 **Ni** Nickel 58.69	29 **Cu** Copper 63.54	30 **Zn** Zinc 65.37	31 **Ga** Gallium 69.72	32 **Ge** Germanium 72.59	33 **As** Arsenic 74.9216	34 **Se** Selenium 78.96	35 **Br** Bromine 79.904	36 **Kr** Krypton 83.80
37 **Rb** Rubidium 85.4678	38 **Sr** Strontium 87.62	39 **Y** Yttrium 88.905	40 **Zr** Zirconium 91.22	41 **Nb** Niobium 92.906	42 **Mo** Molybdenum 95.94	▲ 43 **Tc** Technetium (98)	44 **Ru** Ruthenium 101.07	45 **Rh** Rhodium 102.906	46 **Pd** Palladium 106.4	47 **Ag** Silver 107.868	48 **Cd** Cadmium 112.40	49 **In** Indium 114.82	50 **Sn** Tin 118.69	51 **Sb** Antimony 121.75	52 **Te** Tellurium 127.60	53 **I** Iodine 126.9044	54 **Xe** Xenon 131.29
55 **Cs** Cesium 132.905	56 **Ba** Barium 137.33	72 **Hf** Hafnium 178.49	73 **Ta** Tantalum 180.948	74 **W** Tungsten 183.85	75 **Re** Rhenium 186.2	76 **Os** Osmium 190.2	77 **Ir** Iridium 192.2	78 **Pt** Platinum 195.09	79 **Au** Gold 196.967	80 **Hg** Mercury 200.59	81 **Tl** Thallium 204.383	82 **Pb** Lead 207.19	83 **Bi** Bismuth 208.980	▲ 84 **Po** Polonium (209)	▲ 85 **At** Astatine (210)	▲ 86 **Rn** Radon (222)	
▲ 87 **Fr** Francium (223)	▲ 88 **Ra** Radium (226.0254)	▲ 104 **Rf** Rutherfordium (261)	▲ 105 **Db** Dubnium (262)	▲ 106 **Sg** Seaborgium (263)	▲ 107 **Bh** Bohrium (262)	▲ 108 **Hs** Hassium (265)	▲ 109 **Mt** Meitnerium (266)	▲ 110 **Uun** Ununnilium (269)	▲ 111 **Uuu** Unununium (272)	▲ 112 **Uub** Ununbium (277)	113 **Uut**	114 **Uuq**	115 **Uup**	116 **Uuh**	117 **Uus**	118 **Uuo**

6	57 **La** Lanthanum 138.91	58 **Ce** Cerium 140.12	59 **Pr** Praseodymium 140.907	60 **Nd** Neodymium 144.24	▲ 61 **Pm** Promethium (145)	62 **Sm** Samarium 150.35	63 **Eu** Europium 151.96	64 **Gd** Gadolinium 157.25	65 **Tb** Terbium 158.9254	66 **Dy** Dysprosium 162.50	67 **Ho** Holmium 164.930	68 **Er** Erbium 167.26	69 **Tm** Thulium 168.934	70 **Yb** Ytterbium 173.04	71 **Lu** Lutetium 174.97
7	▲ 89 **Ac** Actinium (227.0278)	▲ 90 **Th** Thorium 232.038	▲ 91 **Pa** Protactinium (231.0359)	▲ 92 **U** Uranium 238.03	▲ 93 ★ **Np** Neptunium (237.0482)	▲ 94 ★ **Pu** Plutonium (244)	▲ 95 ★ **Am** Americium (243)	▲ 96 ★ **Cm** Curium (247)	▲ 97 ★ **Bk** Berkelium (247)	▲ 98 ★ **Cf** Californium (251)	▲ 99 ★ **Es** Einsteinium (252)	▲ 100 ★ **Fm** Fermium (257)	▲ 101 ★ **Md** Mendelevium (258)	▲ 102 ★ **No** Nobelium (259)	▲ 103 ★ **Lr** Lawrencium (260)

Note: Elements 113-118 are not currently known. They are shown in the table at their expected positions for information only.

McGraw-Hill Children's Publishing READY REFERENCE IF660

Updated July, 2001

Name _____

Period _____ Date _____

EXTRA CREDIT

Write the appropriate name given on the right for each phrase

1.	_____	**What you do with dead people**	**a. H**
2.	_____	**A western ranch owner**	**b. N**
3.	_____	**When Cal Ripkin Jr. watches pitches**	**c. Ni**
4.	_____	**Storage place for cars**	**d. Si**
5.	_____	**What most science courses do (not this one though)**	**e. Cu**
6.	_____	**A thing you turn on when it is dark**	**f. He**
7.	_____	**Eve's husband**	**g. B**
8.	_____	**An ox's outer covering**	**h. I**
9.	_____	**Half a dime**	**i. Sb**
10.	_____	**The Lone Ranger's horse**	**j. oxide**
11.	_____	**Not fat**	**k. Rh**
12.	_____	**A man who gives passes to traffic court**	**l. atom**
13.	_____	**Gin with water in it**	**m. Ba**
14.	_____	**What I do when I'm hungry**	**n. Fe**
15.	_____	**Male of the Ganese tribe**	**o. Ca**
16.	_____	**What torpedoed ships do**	**p. Pd**
17.	_____	**She sings "Because you loved me"**	**q. C**
18.	_____	**What he did to a bucking horse**	**r. Zn**
19.	_____	**What she wear perfume**	**s. Ag**
20.	_____	**What she got after the divorce**	**t. catalyst**
21.	_____	**Big Greek theater**	**u. electrolyte**
22.	_____	**What should be done to a wounded man**	**v. Sn**
23.	_____	**A crazy inmate**	**w. Te**
24.	_____	**Night rider for Helen of Troy**	**x. Mn**
25.	_____	**What I use to press clothes**	**y. Se**

THE PUZZLE PAGE

Element Search
by *Oliveros McLloyd*

Hidden in the puzzle below are the names of the first 50 elements. Find them forward, backward, up, down, or diagonally. Circle each name as you find it. Some names overlap, using letters more than once; not all of the letters in the puzzle will be used.

Element names (atomic number 1–50)

1. Hydrogen
2. Helium
3. Lithium
4. Beryllium
5. Boron
6. Carbon
7. Nitrogen
8. Oxygen
9. Fluorine
10. Neon
11. Sodium
12. Magnesium
13. Aluminum
14. Silicon
15. Phosphorus
16. Sulfur
17. Chlorine
18. Argon
19. Potassium
20. Calcium
21. Scandium
22. Titanium
23. Vanadium
24. Chromium
25. Manganese
26. Iron
27. Cobalt
28. Nickel
29. Copper
30. Zinc
31. Gallium
32. Germanium
33. Arsenic
34. Selenium
35. Bromine
36. Krypton
37. Rubidium
38. Strontium
39. Yttrium
40. Zirconium
41. Niobium
42. Molybdenum
43. Technetium
44. Ruthenium
45. Rhodium
46. Palladium
47. Silver
48. Cadmium
49. Indium
50. Tin

T C H L O R I N E O N Y S E P T M O T H D
J M B E C A I U N Z S Q X J N U L S L M Y
R I U S L T J E I U E B V Z I I M A A E O
P U V I R I G F R U T H E N I U M N B Q L
S W B O T Y U O O W Z X A R I L G O S O L
C E G I X N H M U V E T I D Y A A U R S C
A E L O D P O T L C I M O H N L L M A B M
N L N E S I M R F T I H U E S F L U W G S
D C E O N E U U T O R N S N U N I I Y E O
I L H K B I N M I S P E E R I N U H U R R
U P O R C R U O K C A N E S E M M T V M E
M Z M X O I A M G P L S O G R P U I O A U
J S V A D M N C O R L A O R K A P L C N I
B C I A G I I T I N A R C L O R Y O A I L
W Y N L O N A U C A D M I U M B Y X C U O
T A T B I S E Z M Y I V O I D I J P R M D
V E I T S C A S H M U I T E N H C E T S P
Z U Z I R C O N I U M X N O Q D V W L O I
M O U I V I E N R U R U I Z N L I T X R N
F M P L N O U U E J M V C A I Y B U O P Q
W J E V N C O M U I D O S S L T S N M I X

KUDZU

by Marlette